SOME NEW AMERICAN PYRALIDOID MOTHS.

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The following descriptions are offered in response to requests for determinations. One new genus and five new species are described.

Family Phycitidae.

Subfamily Phycitinae.

RIBUA, new genus.

Genotype.—**Ribua innoxia,** new species.

Antennae simple and pubescent in both sexes. Labial palpus obliquely ascending in the male, porrect in the female (the third segment down-curved). Maxillary palpus minute, filiform. Fore wing with nine veins; 4 and 9 absent; 2 from cell just before lower outer angle; 3 and 5 closely approximate at base; 6 from below upper angle of cell; male with costal fold. Hind wing with six veins; 4 absent and 7 and 8 fused to costa (rarely with 8 represented as a short spur at costa); 2 and 3 parallel; 3 and 5 connate; cell slightly less than one-half the length of wing. Abdomen of male with a pair of simple, lateral, sensory hair tufts on eighth segment (fig. 6).

Male genitalia with uncus broad, only slightly narrowed beyond base and with apex bluntly rounded. Gnathos terminating in an asymmetrical process with two short, curved hooks. Transtilla represented by a narrow band with a flattened central process which fuses with apical process of gnathos. Harpe with costa very slightly produced at apex, otherwise simple; apex evenly rounded. Anellus a shield-like, slightly curved plate, somewhat wider than long. Aedeagus straight, moderately stout, smooth. Penis with cornutus developed as a narrow, weakly sclerotized, flattened and slightly curved, elongate band, otherwise unarmed. Vinculum long, broad; terminal margin broadly rounded.

Female genitalia with bursa copulatrix membranous; signum consisting of a pair of minute, closely approximate, bluntly pointed and flattened spines (rarely a single spine). Ductus bursae a flattened and sclerotized tube for most of its length; the dorsal side of the tube extended at genital opening into a flat triangular plate behind the opening, the ventral surface of the tube longitudinally wrinkled toward genital opening. Ductus seminalis from near end of bursa.

Larva normal for the subfamily (the rings about the bases of setae IIb of mesothorax and III of eighth abdominal segment strongly sclerotized and darkly pigmented). Skin finely granulate, granulations dark. Many muscle attachments on dorsum of body indicated by rather conspicuous whitish pits. Setal arrangements on head and body similar to those of *Plodia* and *Ephestia.*

Pupa with tenth abdominal segment terminating in a pair of well separated, short, stout, ventrally curved spines (fig. 7).

Remarks.—This genus is closest to *Plodia* Guenée, from which

it differs as follows: Labial palpus of male obliquely ascending rather than porrect (third segment not bent forward); tufts on eighth abdominal segment simple; apical process of gnathos bifurcate and asymmetrical (a single, simple, short hook in *Plodia*); anellus fusing with gnathos; ductus seminalis from near end of bursa; tenth abdominal segment of pupa terminating in a pair of hooks; larva with many muscle attachments of abdomen conspicuously marked, body tubercles darkly pigmented (very pale in *Plodia*).

Ribua innoxia, new species.

Plates 6, 7; Figures 1–1c, 6, 7, 9.

Male.—Head dark grayish fuscous (in some specimens a few red scales near bases of antennae). Labial palpus dark grayish fuscous finely speckled with grayish white and more or less shaded with red toward apex. Fore wing ash-gray obscurely marked and shaded with blackish fuscous; an ill-defined, dark basal patch; beyond this a faint indication of a narrow, pale band, slanting obliquely outward from costa to inner margin and outwardly shaded by blackish fuscous; subterminal line obscure, pale, straight and parallel with termen, narrowly shaded inwardly and outwardly by dark scaling; the veins faintly indicated by dark scaling; a scattering of dull reddish scales on the wing, especially along the fold, on upper vein of cell and bordering the subterminal line; all markings obscure and the dark shadings more or less diffused; cilia ashy gray. Hind wing dull white with a narrow smoky-fuscous shade along costa and termen, most conspicuous toward apex; veins very faintly indicated by dark scaling; cilia dull white with a fuscous basal band.

Alar expanse 12–15 mm.

Genitalia (figs. 1–1c) with vinculum nearly twice as long as tegumen; prongs of apical process of gnathos (fig. 1a) separated (space between them U-shaped).

Female.—Similar to the male in color and markings.

Alar expanse 12–16 mm.

Genitalia (fig. 9) not exhibiting any marked specific characters.

Type and paratypes.—No. 53432 U. S. National Museum.

Type locality.—Cuba.

Host.—Fungus on pineapple.

Remarks.—Described from male type and 16 male and 16 female paratypes reared at New Orleans, La. (April to July, 1933 and 1938) from larvae taken on pineapples from Cuba. The larvae are frequently intercepted by quarantine inspectors of the Bureau of Entomology and Plant Quarantine on shipments of Cuban pineapples. According to J. M. Singleton, of the Foreign Plant Quarantines Division, "Whenever the larva is found, it is invariably closely associated with pineapples heavily infested with the pineapple mealybug (*Pseudococcus brevipes* Ckll.) and deposits of the sooty-mold fungus resulting from the honeydew secretions of the mealybug. No evidence of

feeding by the larva on the pineapple itself has been noticed, and it was at first thought that the larva feeds on the mealybug; but since it has been observed that it is found only when the fungus is present, and not on pineapples having the mealybugs but no fungus, it now appears that the larva is more closely associated with the fungus than with the mealybug. The larvae, as well as the mealybugs with the attendant fungus, are always found near the base of the pineapple fruit, the smaller-sized pineapples usually being involved. The full-grown larva is of blackish color, similar to that of the deposits of the sooty-mold fungus with which it is found, and it is sometimes rather difficult to detect on the pineapples. It seems that the number of larvae found on a pineapple varies with the amount of fungus present, and as many as eight full-grown larvae have been taken from one small pineapple which had an unusually heavy mealybug infestation with a large amount of fungus present."

The larva is easily confused with that of *Ephestia cautella* (Walker) which is intercepted occasionally on pineapple. Indeed there are few reliable and consistent characters to separate larvae of *innoxia* from those of any of the *Ephestia* species.

Ordinarily the larva of *innoxia* is recognizable by its darker (smoky-brown) abdomen; but as there are frequent pale examples, especially among immature larvae, it is not always possible to distinguish an *innoxia* caterpillar by its color. In mature larvae the muscle-attachment pits offer a good character. These pits can be distinguished in some *Ephestia* larvae but they are fewer and less distinct than in larvae of *innoxia*.

The moths (especially the males) are easily identified by their genitalia, and the pupa by the hooked processes on the anal segment. These are not found on any phycitid of the *Ephestia-Plodia* groups as far as I know. This pupal character, however, is generic and would not distinguish *innoxia* specifically.

There is another species or race of *Ribua* on the pineapple in Puerto Rico. Its larvae have been intercepted several times by the Division of Foreign Plant Quarantines, and a couple of moths have been reared. The male genitalia show what appear to be specific differences from *innoxia;* but the moths themselves are in too poor condition for description.

Mineola supposita, new species.

Plates 6, 7; Figures 2–2d, 12.

Male.—Labial palpus dark grayish fuscous, sprinkled with whitish scales on outer side of basal segment and on inner sides of all segments. Head dull ocherous fuscous. Thorax dark grayish fuscous with a shading of dull red, semilustrous. Fore wing very dark grayish fuscous with a powdering of white scales on basal and mid costal areas and very faintly in the area bordering

termen; antemedial line narrow, slanting from inner third of costa to just before middle of inner margin and slightly notched at vein 1b, pale ashy gray bordered inwardly from top of cell to inner margin by a dull-red triangular patch which has an obscure, straight, blackish line along its inner edge; inner margin from base to antemedial line narrowly bordered with reddish scales; subterminal line nearly parallel with termen, slightly outcurved between vein 6 and fold, narrow, pale gray and inwardly margined by a narrow black line; a conspicuous blackish-fuscous patch between costa and cell and outwardly bordering the antemedial line; a similar dark shade on costa near apex; these blackish patches shading into the dark central area of wing and enclosing the triangular white-dusted area between midcosta and cell; two black dots at outer angles of cell, the upper dot about half the size of the lower; some obscure, dull-red shading in terminal area, especially toward tornus; along termen a narrow black line more or less broken at the vein ends; cilia semilustrous grayish fuscous with a fine, pale, median line. Hind wing pale smoky fuscous with veins, terminal margin, and apical area darker; cilia slightly paler with a dark subbasal line. Eighth abdominal segment simple.

Alar expanse 16–20 mm.

Genitalia (figs. 2–2d) similar to those of *caliginella* (Hulst) except transtilla broader at apex and arms of anellus stouter.

Female.—Essentially like the male in color and pattern.

Alar expanse 16–19 mm.

Genitalia (fig. 12) differing from those of *caliginella* in that there are no patches of small spines in bursa near junction with ductus bursae.

Type and paratypes.—In Canadian National Collection.
Paratypes.—No. 53433 U. S. National Museum.
Type locality.—Vancouver, British Columbia.
Food plant.—*Cotoneaster.*

Remarks.—Described from male type and 4 male and 8 female paratypes all reared from larvae feeding on *Cotoneaster*, collected by H. Glendenning at the type locality ("24–VI–1938") and referred by Dr. J. McDunnough with request for a name.

The species is very close to and congeneric with *Mineola caliginella* (Hulst), from which it differs in its generally darker color and the genitalic characters noted in the foregoing description. Both *caliginella* and *supposita* eventually may need a different generic placement; for in both the ventral tuft is lacking from the eighth abdominal segment of the male and the basal joint of the male antenna is simple and not triangularly produced as in typical *Mineola* and *Acrobasis*. However, until the genera *Acrobasis* and *Mineola* can be revised the two species had better remain in *Mineola*, with which they agree in genitalic characters.

Family Galleriidae.

Subfamily Macrothecinae.

Alpheias conspirata, new species.

Plate 7; Figures 5–5b, 11.

Male.—Labial palpus ashy gray below, blackish fuscous with interspersed brownish scales above. Face, head, and thorax brownish fuscous, more or less suffused with black. Fore wing ashy gray obscurely and diffusely marked with blackish fuscous and sparsely sprinkled with dull reddish-brown scales; the dark markings form an ill-defined angulate basal patch, a black line along costal margin from base to middle, a short costal dash just beyond basal patch, an obscure transverse subterminal band continued from the apices of two subapical costal dashes and extending parallel with termen to inner margin near tornus (very poorly defined), a small black spot at end of cell, and a row of small black dots on termen; cilia dark gray, paler at extremities. Hind wing pale smoky fuscous with a dark line along termen; cilia paler.

Alar expanse 9–11 mm.

Genitalia (figs 5–5b) with clasper rudimentary; aedeagus short, rather narrow; penis very finely spined toward apex.

Female.—Like the male in color and markings.

Alar expanse 10–14 mm.

Genitalia (fig. 11) with genital plate a very narrow, transverse, sclerotized band along ventral edge of genital opening. Ductus bursae broadly sclerotized for a very short distance near genital opening, otherwise membranous.

Larva.—Ocelli I and II approximate, separated from and at right angles to III, IV, and V; ocelli III, IV, and V in a vertical line, more strongly pigmented than I and II. Prespiracular and dorsal shields of prothorax fused and with setae IV and V on the lateral margin. Mesothorax with setae Ia, Ib, IIa, and IIb on a single sclerotized plate. A pigmented, sclerotized ring around the base of seta III on abdominal segments 1 to 8 inclusive. Crochets 26 to 30, arranged in a transverse ellipse. Head and sclerotized plates of body pale brown. Full-grown larvae 9–10 mm. long.

Type and paratypes.—No. 53434 U. S. National Museum.

Type locality.—Mexico.

Food plant.—Pineapple.

Remarks.—Described from male type and 2 male and 4 female paratypes (reared July 12, 1937) from larvae on pineapple from Mexico (larvae intercepted at quarantine station, Brownsville, Tex.), one male and one female paratype from larvae from Vera Cruz, Mexico (Brownsville and Laredo interceptions, July, 1938), and one male paratype from larvae from Oaxaca, Mexico (Laredo interception, July 11, 1938).

The larvae are frequently intercepted on shipments of pineapples from Mexico by quarantine inspectors of the Bureau of Entomology and Plant Quarantine. Mr. O. D. Deputy states: "Every car of pineapples inspected (at Brownsville, Tex.) usually yielded several of the larvae after a reasonable amount

of inspection, and often when one insect was taken from the fruit two or three other larvae were also found, suggesting that the adult lays several eggs on each infested fruit." Mr. Singleton, who has studied the insect, says: "The presence of the larvae on the pineapple is usually indicated by a light web near the base of the fruit, but they, themselves, are usually rather hard to find due to the fact that they secrete themselves under the bases of the leaves usually adhering to the stem of the fruit after it is cut in the field. However, the larvae are sometimes found near the blossom end of the fruit." According to both Deputy and Singleton, the larva does little or no damage to the pineapple itself, but is more or less of a scavenger, feeding on dried particles of the fruit.

Pupation takes place under the larval web on the fruit.

This species is distinguished from all other known species of the genus by its suffused pattern and the lack of clearly defined, white antemedial and subterminal lines on the fore wing. There are two other described Mexican species (*gitonalis* Ragonot and *buccalis* Ragonot), neither of which is represented in the National Collection; but if the descriptions are at all accurate, *conspirata* could not be either one. *Alpheias conspirata* is, as far as I know, the only member of the genus that has been reared. Presumably many of the structural characters given in the foregoing larval description are generic rather than specific; but the sum of the characters plus the association with pineapple should identify the caterpillar.

Family Pyraustidae.

Subfamily Pyraustinae.

Evergestis nolentis, new species.

Plates 6, 7; Figures 4–4b, 8.

Male.—Labial palpus grayish fuscous, white above and shading to white on underside of basal segment. Head grayish fuscous margined laterally with white. Thorax pale-grayish fuscous sparsely sprinkled with white scales. Fore wing grayish heavily dusted with white (giving the entire wing a pale bluish-gray color), with the transverse lines white, a gray shade between postmedial and subterminal lines, and two conspicuous blackish spots in the area covered by the gray shade; transverse antemedial line inwardly oblique, irregularly dentate, outwardly margined by a fine dark line; transverse postmedial line obscure from cell to costa, a contrasting white line only from lower outer angle of cell to inner margin, sharply outcurved at inner margin, inwardly margined by a narrow, obscure dark line; subterminal line irregularly dentate, diffused and broken between vein 6 and apex, sharply incurved from vein 6 to vein 2 and enclosing between veins 3 and 5 a conspicuous blackish spot, sharply outangled at the fold, the area within the angle black scaled and more or less contrasted against the ground color; a fine, short, inwardly curved, blackish dash on outer fifth of costa; terminal edge white with small black dots between the

vein ends; cilia pale gray basally, white outwardly and with a fine subterminal dark line; a few of the scale ends black. Hind wing white with a broad smoky border along termen; terminal margin white with black dots between the vein ends from apex to vein 1c; cilia white, slightly darker basally and somewhat black dusted apically between apex and 1c, pure white at anal angle.

Alar expanse 19–22 mm.

Genitalia (figs. 4–4b) with tegumen rather narrow and uncus and gnathos correspondingly narrow at their bases. Harpe narrowed just beyond base. Penis with an elongate cluster of short, stout cornuti.

Female.—Like the male in color and pattern.

Alar expanse 19–23 mm.

Genitalia (fig. 8) with signa densely spined.

Type and paratypes.—No. 53435 U. S. National Museum. Paratypes also in Los Angeles Museum and John L. Sperry Collection.

Type locality.—San Felipe Wash, San Diego County, Calif.

Food plant.—Unknown.

Remarks.—Described from male type, 7 male and 10 female paratypes from the type locality (type and 7 paratypes collected by J. A. Comstock, February 21, 1938, and 10 paratypes collected by Grace H. and John L. Sperry, February 20, 1938), and three female paratypes from the Barnes Collection, labeled "Narrows, Calif. 3–15–26."

The new species is close to *lunulalis* Barnes and McDunnough, from which it is distinguished by its gray rather than brown ground color, the conspicuous blackish spots in the outer area of the fore wing, its narrower tegumen, uncus, and gnathos, its numerous cornuti (which seem to be completely absent in *lunulalis*), and its spinose signa. In *lunulalis* the signa are covered with fine disk-like granules rather than spines.

Subfamily Nymphulinae.

Nymphula broweri, new species.

Plates 6, 7; Figures 3–3b, 10.

Male.—Blackish fuscous. A few white scales on palpi and sides of head. Fore wing with a fine white line from costa beyond middle to slightly below vein 5, straight from costa to vein 5 and from there somewhat outbent; in some specimens indications of a pale, transverse, median line; a couple of white scales on each of veins 4 to 7 near termen; cilia dark fuscous at apex and tornus, slightly paler than ground color of wing and with a dark basal band, white between veins 7 and 3 and with a dark dash at end of vein 4. Hind wing with the faintest indication of a pale, curved, transverse postmedian line, more clearly indicated on under surface of wing; cilia slightly paler than wing with a dark (blackish) basal band. Sternite of eighth abdominal segment produced at caudal end into a stout curved hook.

Alar expanse 10–12 mm.

Genitalia (figs. 3–3b) figured from type. Uncus stout, laterally constricted

at middle, broadening at apex. A cupped, ventro-lateral process (fig. 3, *X*) projecting from each side of tegumen near base. Penis with one moderately large, strongly curved cornutus, and a cluster of 6 to 8 smaller, straight cornuti.

Female.—Like the male in color and markings.

Alar expanse 10–12 mm.

Genitalia (fig. 10) with wide genital opening. Ductus bursae finely scobinate toward genital opening, flattened and broadly sclerotized near junction with bursa copulatrix. Bursa with a few very small, widely spaced spines scattered over inner surface.

Larva.—Without tracheal gills. Head dark brown; ocelli without pigment under the lenses, I and II larger than the others, III and IV small and closely approximate; frons broad, triangular, extending nearly to incision of dorsal hind margin of epicranium. Prothoracic shield blackish brown, very large, extending laterally to include the prespiracular setae. Thoracic segments pale smoky fuscous except ventral surface of prothorax and mesothorax and the intersegmental skin between prothorax and head, which are dull white; coxae of thoracic legs white with sclerotized areas dark brown; prothoracic coxae touching, likewise mesothoracic coxae; thoracic spiracle greatly reduced, apparently functionless. Abdomen sordid white; setae very fine and short, tubercles minute and unpigmented; spiracles small, round, pale but apparently normal; eighth segment with a decided dorsal hump; prolegs very short and broad, merely low humps on ventral surface of abdomen; crochets irregularly biordinal, 46–50, arranged in two transverse rows, the crochets of the caudal row much shorter than those of the cephalic row. Length of full-grown larva about 10.

Pupa.—With spiracles on abdominal segments 2, 3, and 4 enlarged and protruding; other abdominal spiracles vestigial.

Type and paratypes.—No. 53436 U. S. National Museum. Paratypes also in collection of A. E. Brower.

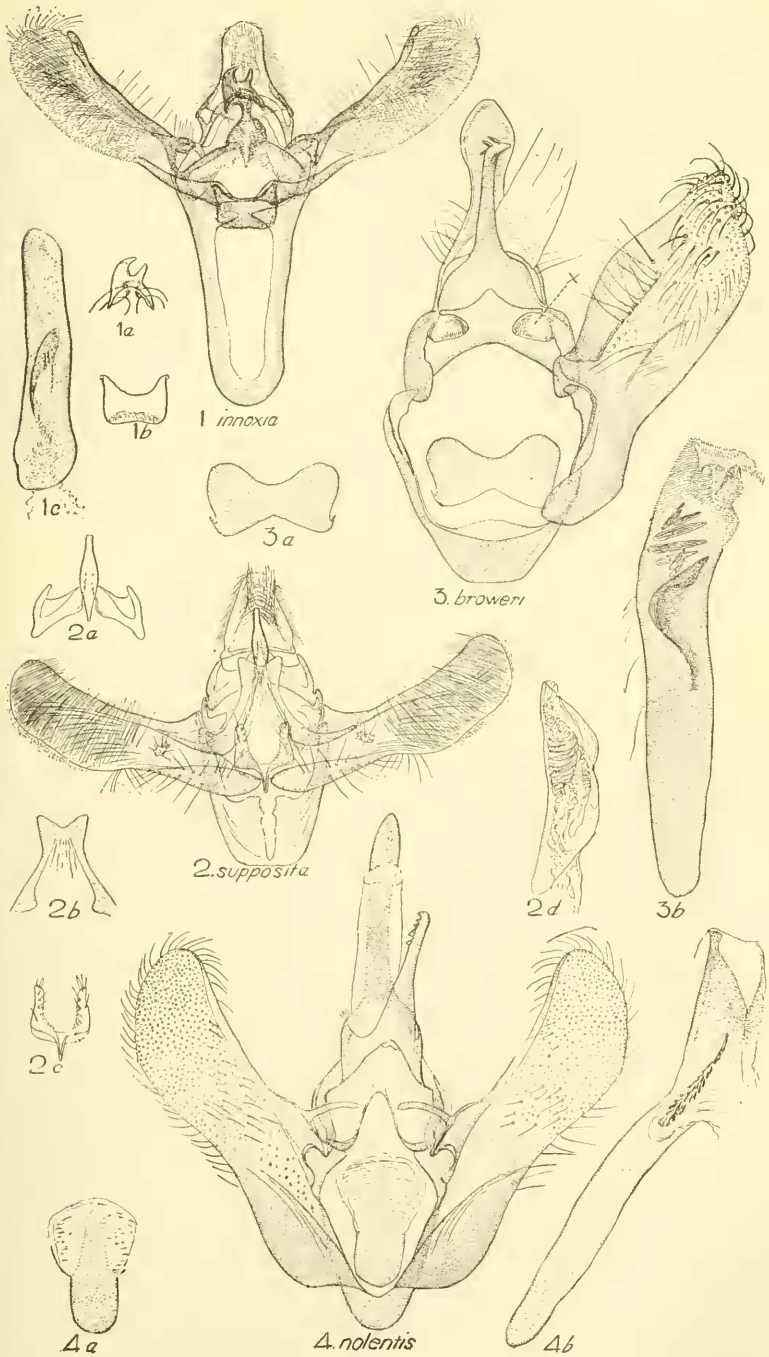
Type locality.—Southwest Harbor, Maine.

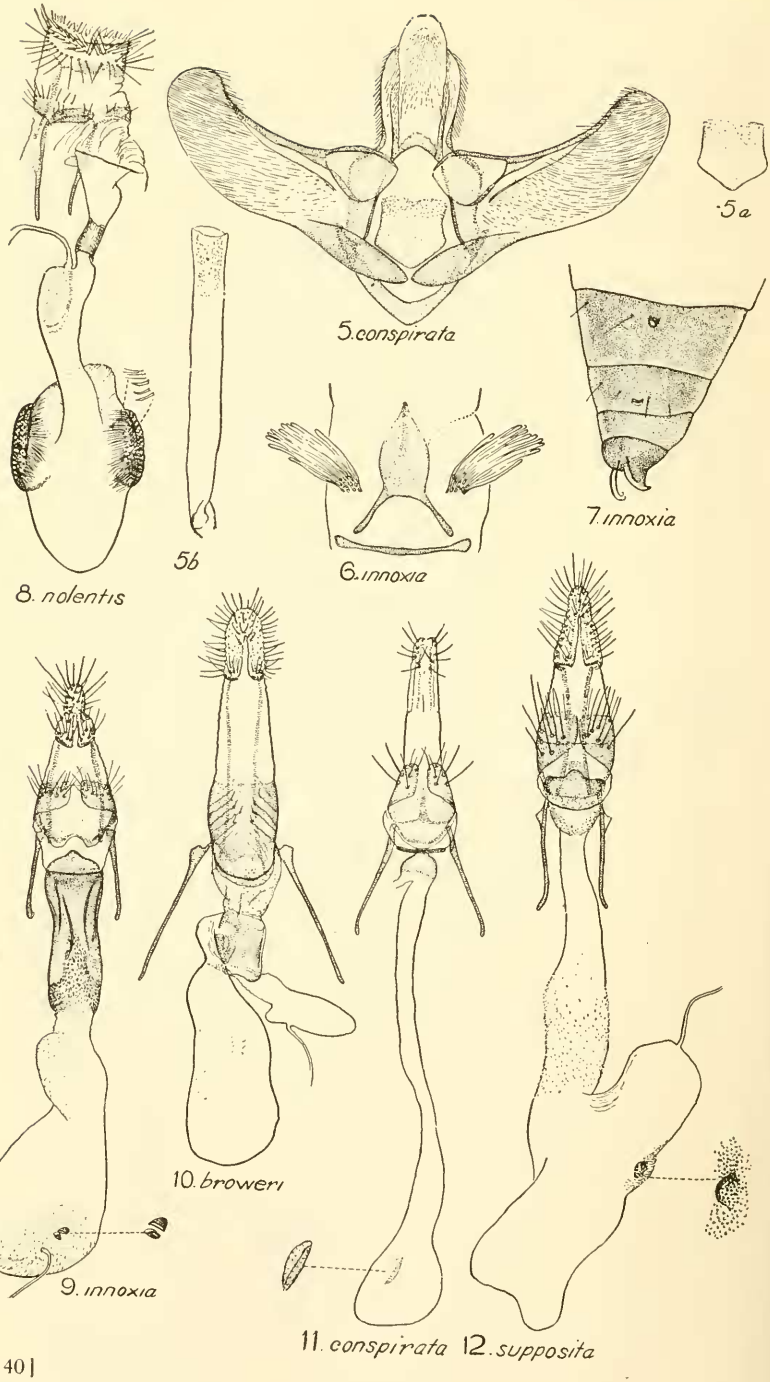
Food plant.—*Cephalozia fluitans* (Nees).

Remarks.—Described from male type and 45 male and 3 female paratypes from the type locality, all collected by A. E. Brower on various July dates, and one male paratype from Lakehurst, N. J., collected by Otto Bucholz ("VI–2," No. 312). A few of the specimens were reared by Mr. Brower, but the labels do not indicate which they are.

This species is like no other North American *Nymphula* and could be confused only with dark and suffused specimens of *obliteralis* (Walker). The latter, however, always show some trace of a discal spot on the fore wing and have quite different genitalia; the penis has one long, thin, flattened, sinuate cornutus and lacks the cluster of smaller cornuti, the uncus is more slender, and the ventro-lateral projections from tegumen are hook-like rather than cupped. *N. broweri* is superficially similar to some tropical species of *Diathrausta* but is easily separable from that genus on venation.

I take pleasure in naming the species after its collector.


1a
1b
1 innoxia
1c
3a
3. broweri
2a
2. supposita
2b
2d
3b
2c
4a
4. nolentis
4b


5.conspirata
5a
5b
6.innoxia
7.innoxia
8. nolentis
9. innoxia
10. broweri
11. conspirata
12. supposita

Concerning the habits of the species, Mr. Brower states that he has found it only "about the water holes out in the middle of two large sphagnum bogs, one near Southwest Harbor and the other way up in Aroostook County, Maine, near Patten. The moths rest on *Utricularia* and grasses. They fly with a fluttering flight over the water, often settling on it. The larvae in their cases which I collected were from the shallow pools and were from ½ to 4 inches below the surface. They cling to submerged portions of the plants, mostly sedges, and apparently they pupate attached to these plants. The moths have a rather long period of flight and have never been common. I am not certain of the larval food, but after watching the moths for 3 years and collecting the larval material this year (1938) I believe the food is *Cephalozia fluitans* (Nees), Spruce of the Jungermanniaceae, determined by C. Neville Jones of the Arnold Arboretum. I have been unable to get larvae from the deep water holes where the moths are most common. I reared the moth from the larvae collected."

Explanation of Plates.

Plate 6.

Figs. 1–1c. *Ribua innoxia*, new species. 1, Ventral view of male genitalia with aedeagus omitted; 1a, apical part of gnathos; 1b, anellus; 1c, aedeagus.

Figs. 2–2d. *Mineola supposita*, new species. 2, Ventral view of male genitalia with aedeagus omitted; 2a, gnathos; 2b, transtilla; 2c, anellus; 2d, aedeagus.

Figs. 3–3b. *Nymphula broweri*, new species. 3, Ventral view of male genitalia with aedeagus and one harpe omitted; 3a, anellus; 3b, aedeagus.

Figs. 4–4b. *Evergestis nolentis*, new species. 4, Ventral view of male genitalia with aedeagus omitted; 4a, anellus; 4b, aedeagus.

Plate 7.

Figs. 5–5b. *Alpheias conspirata*, new species. 5, Ventral view of male genitalia with aedeagus omitted; 5a, anellus; 5b, aedeagus.

Fig. 6. *Ribua innoxia*, new species. Eighth abdominal segment of male showing hair tufts.

Fig. 7. *Ribua innoxia*, new species. Pupa, lateral view of abdominal segments 7 to 10.

Fig. 8. *Evergestis nolentis*, new species. Female genitalia.

Fig. 9. *Rigua innoxia*, new species. Female genitalia.

Fig. 10. *Nymphula broweri*, new species. Female genitalia.

Fig. 11. *Alpheias conspirata*, new species. Female genitalia.

Fig. 12. *Mineola supposita*, new species. Female genitalia.

(The drawings accompanying this paper were made under the supervision of the author by Mrs. Eleanor A. Carlin, of the Bureau of Entomology and Plant Quarantine.)